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10/626,363	07/23/2003	Khoi Nhu Hoang	6518P002C2	1226
7590	02/07/2005		EXAMINER	
Daniel M. DeVos Blakely, Sokoloff, Taylor & Zafman LLP Seventh Floor 12400 Wilshire Boulevard Los Angeles, CA 90025-1030			LI, SHI K	
			ART UNIT	PAPER NUMBER
			2633	

DATE MAILED: 02/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/626,363

Applicant(s)

HOANG ET AL.

Examiner

Shi K. Li

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 23 July 2003 and 10 June 2004.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-42 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-42 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 23 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 9/2/03, 6/10/04.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-3, 5 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Golmie et al. (N. Golmie et al., "A Differentiated Optical Services Model for WDM Networks", IEEE Communications Magazine, February 2000) in view of Sengupta et al. (S. Sengupta et al., "Analysis of Enhanced OSPF for Routing Lights in Optical Mesh Networks", ICC 2002, 28 April-2 May 2002).

Regarding claims 1-3, Golmie et al. teaches in FIG. 3 and Table 1 to divide a WDM network into separate service levels according to QoS criteria. Golmie et al. lists in Table 1 service level parameters and in FIG. 3 the wavelengths corresponding to a service level. The difference between Golmie et al. and the claimed invention is that Golmie et al. does not teach to form service level topology structure. Sengupta et al. teaches in p. 2865, right col., last paragraph concept of optical line group and suggests to use opaque LSA to propagate optical LSA for supporting OSPF. This allows each access node to construct service level topology. One of ordinary skill in the art would have been motivated to combine the teaching of Sengupta et al. with the WDM network of Golmie et al. because extension of OSPF using optical LSA supports real time lightpath provisioning. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use extension of OSPF to construct service

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level topology, as taught by Sengupta et al., in the WDM network of Golmie et al. because extension of OSPF using optical LSA supports real time lightpath provisioning.

Regarding claim 5, Sengupta et al. teaches in p. 2865, left col. to use OSPF extension for dynamic provisioning (i.e., real time establishment) of optical layer connections.

Regarding claim 8, Sengupta et al. teaches to use OSPF to construct and maintain network topology databases in each access node.

3. Claims 4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Golmie et al. and Sengupta et al. as applied to claims 1-3, 5 and 8 above, and further in view of Kodialam et al. (U.S. Patent Application Pub. 2002/0018264 A1).

Golmie et al. and Sengupta et al. have been discussed above in regard to claims 1-3, 5 and 8. The difference between Golmie et al. and Sengupta et al. and the claimed invention is that Golmie et al. and Sengupta et al. do not teach conversion free connectivity constraint. Kodialam et al. teaches in paragraphs [0045] and [0046] that there are OXC with wavelength conversion capability and there are OXC without wavelength conversion capability. In network consisting of OXC without wavelength conversion, the conversion free constraint must be met. One of ordinary skill in the art would have been motivated to combine the teaching of Kodialam et al. with the modified WDM network of Golmie et al. and Sengupta et al. because some OXC do not have wavelength conversion capability to keep the cost of OXC low. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to include conversion free constraint according to the capability of network elements, as taught by Kodialam et al., in the modified WDM network of Golmie et al. and Sengupta et al.

Regarding claim 6, Golmie et al. teaches in Table 1 QoS parameters.

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4. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Golmie et al., Sengupta et al. and Kodialam et al. as applied to claims 4 and 6 above, and further in view of Date ("An Introduction to Database Systems" by C. Date, Addison-Wesley, 1986, pp. 29-41).

Golmie et al., Sengupta et al. and Kodialam et al. have been discussed above in regard to claims 4 and 6. The difference between Golmie et al., Sengupta et al. and Kodialam et al. and the claimed invention is that Golmie et al., Sengupta et al. and Kodialam et al. do not teach to store separate service level topology structure for each service level. Date teaches in Chapter 2 architecture of a database system. In particular, Date teaches in FIG. 2.3 separate storage structure and separate external user views. One of ordinary skill in the art would have been motivated to combine the teaching of Date with the modified WDM network of Golmie et al., Sengupta et al. and Kodialam et al. because separate database views provide network topology for each service level and allows management personnel to engineer and maintain each service level. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide separate topology databases, as taught by Date, in the modified WDM network of Golmie et al., Sengupta et al. and Kodialam et al. because separate database views provide network topology for each service level and allows management personnel to engineer and maintain each service level.

5. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Golmie et al. and Sengupta et al. as applied to claims 1-3, 5 and 8 above, and further in view of Solheim et al. (U.S. Patent Application Pub. 2003/0016414 A1).

Golmie et al. and Sengupta et al. have been discussed above in regard to claims 1-3, 5 and 8. The difference between Golmie et al. and Sengupta et al. and the claimed invention is that

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Golmie et al. and Sengupta et al. do not teach a centralized network server. Solheim et al. teaches in FIG. 2A, FIG. 3 and paragraph [0072] centralized network and element management system (NEMS) and centralized database. One of ordinary skill in the art would have been motivated to combine the teaching of Solheim et al. with the modified WDM network of Golmie et al. and Sengupta et al. because a centralized database provides network management personnel a whole picture of the network and facilitates network management. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a centralized database in a centralized network management system, as taught by Solheim et al., in the modified WDM network of Golmie et al. and Sengupta et al. because a centralized database provides network management personnel a whole picture of the network and facilitates network management.

6. Claims 10-11 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sengupta et al. (S. Sengupta et al., "Analysis of Enhanced OSPF for Routing Lights in Optical Mesh Networks", ICC 2002, 28 April-2 May 2002) in view of Shami et al. (A. Shami et al., "Performance Evaluation of Two GMPLS-Based Distributed Control and Management Protocols for Dynamic Lightpath Provisioning in Future IP Networks", ICC 2002, 28 April-2 May 2002).

Regarding claim 10, Sengupta et al. teaches in FIG. 1 a WDM optical network including a plurality of nodes. Sengupta et al. defines in p. 2865, right col., Section II.A and FIG. 2 optical channel and optical link. Sengupta et al. teaches to use enhanced OSPF for setting up lightpaths. The difference between Sengupta et al. and the claimed invention is that Sengupta et al. does not teach conversion free connectivity. Shami et al. explains in FIG. 1 a network model where a lightpath comprises an optical signal carried by a wavelength channel traversing a series of nodes

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and links. Shami et al. teaches in p. 2290, left col., third paragraph that none of the OXC has wavelength conversion because wavelength conversion is expensive. One of ordinary skill in the art would have been motivated to combine the teaching of Shami et al. with the WDM network of Sengupta et al. to use the same wavelength on all the links along the entire route from source-to-destination because wavelength conversion is expensive. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the same wavelength on all the links along the entire route from source-to-destination, as taught by Shami et al., in the WDM network of Sengupta et al. because wavelength conversion is expensive.

Regarding claim 11, Shami et al. teaches in p. 2290, last paragraph to receive connection request and allocate lightpath. This implies an allocate module for performing the function.

Regarding claim 14, Shami et al. teaches in p. 2291, left col., Section III B that each node maintains the database in a link state approach.

7. Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sengupta et al. and Shami et al. as applied to claims 10-11 and 14 above, and further in view of Golmie et al. (N. Golmie et al., "A Differentiated Optical Services Model for WDM Networks", IEEE Communications Magazine, February 2000).

Sengupta et al. and Shami et al. have been discussed above in regard to claims 10-11 and 14. The difference between Sengupta et al. and Shami et al. and the claimed invention is that Sengupta et al. and Shami et al. do not teach a plurality of service levels. Golmie et al. teaches in FIG. 3 and Table 1 to divide optical links into channels according to a plurality of service levels. One of ordinary skill in the art would have been motivated to combine the teaching of Golmie et al. with the modified WDM network of Sengupta et al. and Shami et al. because different service

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levels fulfill different customer needs. For example, certain customers are willing to pay premier charge for high quality service. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to divide the network into a plurality of service levels, as taught by Golmie et al., in the modified WDM network of Sengupta et al. and Shami et al.

because different service levels fulfill different customer needs.

8. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sengupta et al. and Shami et al. as applied to claims 10-11 and 14 above, and further in view of Solheim et al. (U.S. Patent Application Pub. 2003/0016414 A1).

Sengupta et al. and Shami et al. have been discussed above in regard to claims 10-11 and 14. The difference between Sengupta et al. and Shami et al. and the claimed invention is that Sengupta et al. and Shami et al. do not teach a centralized network server. Solheim et al. teaches in FIG. 2A, FIG. 3 and paragraph [0072] centralized network and element management system (NEMS) and centralized database. One of ordinary skill in the art would have been motivated to combine the teaching of Solheim et al. with the modified WDM network of Sengupta et al. and Shami et al. because a centralized database provides network management personnel a whole picture of the network and facilitates network management. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a centralized database in a centralized network management system, as taught by Solheim et al., in the modified WDM network of Sengupta et al. and Shami et al. because a centralized database provides network management personnel a whole picture of the network and facilitates network management.



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9. Claims 16-19, 21-22, 24-26, 28, 30-34 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sengupta et al. (S. Sengupta et al., "Analysis of Enhanced OSPF for Routing Lights in Optical Mesh Networks", IEEE, 2002) in view of Shami et al. (Shami et al., "Performance Evaluation of Two GMPLS-Based Distributed Control and Management Protocols for Dynamic Lightpath Provisioning in Future IP Networks", ICC 2002, 28 April-2 May 2002).

Regarding claims 16, 25 and 31, Sengupta et al. teaches in FIG. 1 a WDM optical network including a plurality of nodes. Sengupta et al. defines in p. 2865, right col., Section II.A and FIG. 2 optical channel and optical link. Sengupta et al. teaches to use enhanced OSPF for setting up lightpaths. OSPF uses LSAs to distribute topology information. The difference between Sengupta et al. and the claimed invention is that Sengupta et al. does not teach conversion free connectivity. Shami et al. explains in FIG. 1 a network model where a lightpath comprises an optical signal carried by a wavelength channel traversing a series of nodes and links. Shami et al. teaches in p. 2290, left col., third paragraph that none of the OXC has wavelength conversion because wavelength conversion is expensive. One of ordinary skill in the art would have been motivated to combine the teaching of Shami et al. with the WDM network of Sengupta et al. to use the same wavelength on all the links along the entire route from source-to-destination because wavelength conversion is expensive. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the same wavelength on all the links along the entire route from source-to-destination, as taught by Shami et al., in the WDM network of Sengupta et al. because wavelength conversion is expensive.

Regarding claims 17 and 32, Sengupta et al. teaches to use enhanced OSPF for setting up lightpaths.

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Regarding claims 18 and 33, Shami et al. teaches in p. 2290, left col., second paragraph optical circuits.

Regarding claims 19, 26 and 34, Shami et al. teaches dynamic lightpath provisioning (see abstract).

Regarding claim 21, Sengupta et al. teaches in p. 2866, right col., last paragraph link management protocol for discovering neighbors.

Regarding claim 22, in OSPF, each node sends update messages to all nodes in the network for maintaining network topology information.

Regarding claims 24 and 36, Shami et al. teaches in p. 2290, right col., second paragraph that a wavelength is either reserved or free (i.e., allocated or unallocated, respectively).

Regarding claim 28, Shami et al. teaches in p. 2291, right col., first and second paragraphs to maintain the database.

Regarding claim 30, Sengupta et al. teaches in p. 2866, right col., last paragraph link management protocol for discovering neighbors and populating link state advertisement (LSA).

10. Claims 20, 27 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sengupta et al. and Shami et al. as applied to claims 16-19, 21-22, 24-26, 28, 30-34 and 36 above, and further in view of Golmie et al. (N. Golmie et al., "A Differentiated Optical Services Model for WDM Networks", IEEE Communications Magazine, February 2000).

Sengupta et al. and Shami et al. have been discussed above in regard to claims 16-19, 21-22, 24-26, 28, 30-34 and 36. The difference between Sengupta et al. and Shami et al. and the claimed invention is that Sengupta et al. and Shami et al. do not teach a plurality of service levels. Golmie et al. teaches in FIG. 3 and Table 1 to divide optical links into channels

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according to a plurality of service levels. One of ordinary skill in the art would have been motivated to combine the teaching of Golmie et al. with the modified WDM network of Sengupta et al. and Shami et al. because different service levels fulfill different customer needs. For example, certain customers are willing to pay premier charge for high quality service. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to divide the network into a plurality of service levels, as taught by Golmie et al., in the modified WDM network of Sengupta et al. and Shami et al. because different service levels fulfill different customer needs.

11. Claims 23 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sengupta et al. and Shami et al. as applied to claims 16-19, 21-22, 24-26, 28, 30-34 and 36 above, and further in view of Solheim et al. (U.S. Patent Application Pub. 2003/0016414 A1).

Sengupta et al. and Shami et al. have been discussed above in regard to claims 16-19, 21-22, 24-26, 28, 30-34 and 36. The difference between Sengupta et al. and Shami et al. and the claimed invention is that Sengupta et al. and Shami et al. do not teach a centralized network server. Solheim et al. teaches in FIG. 2A, FIG. 3 and paragraph [0072] centralized network and element management system (NEMS) and centralized database. One of ordinary skill in the art would have been motivated to combine the teaching of Solheim et al. with the modified WDM network of Sengupta et al. and Shami et al. because a centralized database provides network management personnel a whole picture of the network and facilitates network management. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a centralized database in a centralized network management system, as taught by Solheim et al., in the modified WDM network of Sengupta et al. and Shami et al. because a

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centralized database provides network management personnel a whole picture of the network and facilitates network management.

12. Claims 37-40 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sengupta et al. and Shami et al. as applied to claims 16-19, 21-22, 24-26, 28, 30-34 and 36 above, and further in view of Freeman ("Telecommunication System Engineering" by R. Freeman, John Wiley & Sons, 1980, pp 99-103).

Sengupta et al. and Shami et al. have been discussed above in regard to claims 16-19, 21-22, 24-26, 28, 30-34 and 36. The difference between Sengupta et al. and Shami et al. and the claimed invention is that Sengupta et al. and Shami et al. do not teach a machine-readable medium. Freeman teaches in Section 12 stored-program control (SPC). Freeman teaches in p. 100 to store method steps as program in memory for providing instructions to a controller or computer. One of ordinary skill in the art would have been motivated to combine the teaching of Freeman with the modified WDM network of Sengupta et al. and Shami et al. because SPC is flexible and expandable such that it is easy to upgrade the system by rewriting the program. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use SPC and store program in machine-readable medium, as taught by Freeman, in the modified WDM network of Sengupta et al. and Shami et al. because SPC is flexible and expandable such that it is easy to upgrade the system by rewriting the program.

13. Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sengupta et al., Shami et al. and Freeman as applied to claims 37-40 and 42 above, and further in view of Golmie et al. (N. Golmie et al., "A Differentiated Optical Services Model for WDM Networks", IEEE Communications Magazine, February 2000).

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Sengupta et al., Shami et al. and Freeman have been discussed above in regard to claims 37-40 and 42. The difference between Sengupta et al., Shami et al. and Freeman and the claimed invention is that Sengupta et al., Shami et al. and Freeman do not teach a plurality of service levels. Golmie et al. teaches in FIG. 3 and Table 1 to divide optical links into channels according to a plurality of service levels. One of ordinary skill in the art would have been motivated to combine the teaching of Golmie et al. with the modified machine-readable medium of Sengupta et al., Shami et al. and Freeman because different service levels fulfill different customer needs. For example, certain customers are willing to pay premier charge for high quality service. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to divide the network into a plurality of service levels, as taught by Golmie et al., in the modified machine-readable medium of Sengupta et al., Shami et al. and Freeman because different service levels fulfill different customer needs.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shi K. Li whose telephone number is 571 272-3031. The examiner can normally be reached on Monday-Friday (8:30 a.m. - 5:00 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 571 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

skl  
25 January 2005

  
**M. R. SEDIGHIAN**  
**PRIMARY EXAMINER**